

TAXONOMIC SIGNIFICANCE OF OVIPOSITOR IN SOME INDIAN GRASSHOPPERS (ORTHOPTERA: ACRIDIDAE)¹

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(With two plates and a text-figure)

Comparative study of ovipositor is made in thirty Indian species representing twenty-eight genera of the family Acrididae. Its taxonomic significance is shown. Shape of dorsal and ventral valves, length of dorsal valve and lateral apodeme are suggested as characters of taxonomic significance.

INTRODUCTION

The ovipositor is an organ for the process of deposition of eggs. It consists of three pairs of valves. Slifer (1939), Agarwala (1951) and Uvarov (1966) named first and third valves of ovipositor as ventral and dorsal valves respectively. Qadri (1940) named them as anterior and lateral valves. The second valve was named as upper egg-guide by Slifer (1939), posterior valve by Qadri (1940), mesial valve by Agarwala (1951) and inner valve by Uvarov (1966). The present writers followed Agarwala (1951) in adopting the names, ventral, mesial and dorsal valves for first, second and third valves of ovipositor respectively (fig. 1). Agarwala (1953) made a comparative study of ovipositor in various species of Acrididae and correlated the morphology of ovipositor with the nature of the oviposition sites. Mishchenko (1952) and Willemse (1967, 1968, 1975, 1977) gave brief descriptions and illustrations of ovipositor in some species of Acrididae.

Keeping in view the taxonomic importance of ovipositor, the present writers made an

attempt to make a comparative study of ovipositor in thirty Indian species representing twenty-eight genera of the family Acrididae. The characters i.e. shape of dorsal and ventral valves, length of dorsal valve and lateral apodeme of ovipositor are suggested as characters of taxonomic significance.

Descriptions of ovipositor:

1. **Pyrgomorpha conica** (Olivier) (Pl. 1, fig. A).—Dorsal valve moderately broad, slightly more than three times as long as wide, distinctly shorter than lateral apodeme, dorsal condyle prominent; ventral valve with apical tip pointed, basal sclerite well developed, setose.

2. **Atractomorpha crenulata** (Fabricius) (Pl. 1, fig. B).—Dorsal valve moderately broad, four times as long as wide, slightly longer than lateral apodeme, dorsal condyle much prominent; ventral valve with slope deeply concave, basal sclerite narrow; mesial valve and apical tip long and pointed.

3. **Chrotogonus trachypterus** (Blanchard) (Pl. 1, fig. C).—Dorsal valve broad, two and a half times as long as wide, as long as lateral apodeme, dorsal edge tuberculate, dorsal condyle not prominent; ventral valve with apical tip pointed, basal sclerite narrow,

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setose on apical half; mesial valve almost triangular.

4. *Aularches scabiosae* (Fabricius) (Pl. 1, fig. D).—Dorsal valve moderately broad, slightly more than three times as long as wide, longer than lateral apodeme, apical tip curved and pointed, dorsal edge tuberculate, dorsal condyle not prominent; ventral valve with slope deeply concave, basal sclerite narrow and tuberculate.

5. *Poecilocerus pictus* (Fabricius) (Pl. 1, fig. E).—Dorsal valve broad, less than two and a half times as long as wide, much shorter than lateral apodeme, apical tip small and pointed, dorsal edge with irregular ridges, dorsal condyle less prominent; ventral valve with slope deeply concave, basal sclerite narrow and smooth.

6. *Orthacris ceylonica* (Kirby) (Pl. 1, fig. F).—Dorsal valve more or less of uniform width, five times as long as wide, longer than lateral

apodeme, apical tip blunt, dorsal condyle much prominent; ventral valve with apical tip blunt, lateral tooth distinct, basal sclerite narrow, serrated apically; mesial valve with apical tip small and pointed.

7. *Hieroglyphus banian* (Fabricius) (Pl. 1, fig. G).—Dorsal valve moderately broad, three and a half times as long as wide, slightly shorter than lateral apodeme, dorsal condyle prominent; ventral valve with slope deeply concave, lateral tooth well developed, lateral and basal sclerites serrated basally; mesial valve dilated apically.

8. *Spathosternum prasiniferum* (Walker) (Pl. 1, fig. H).—Dorsal valve moderately broad, slightly more than three times as long as wide, as long as lateral apodeme, dorsal condyle much prominent; ventral valve with slope deeply concave, lateral tooth absent, lateral and basal sclerites smooth; mesial valve blunt apically.

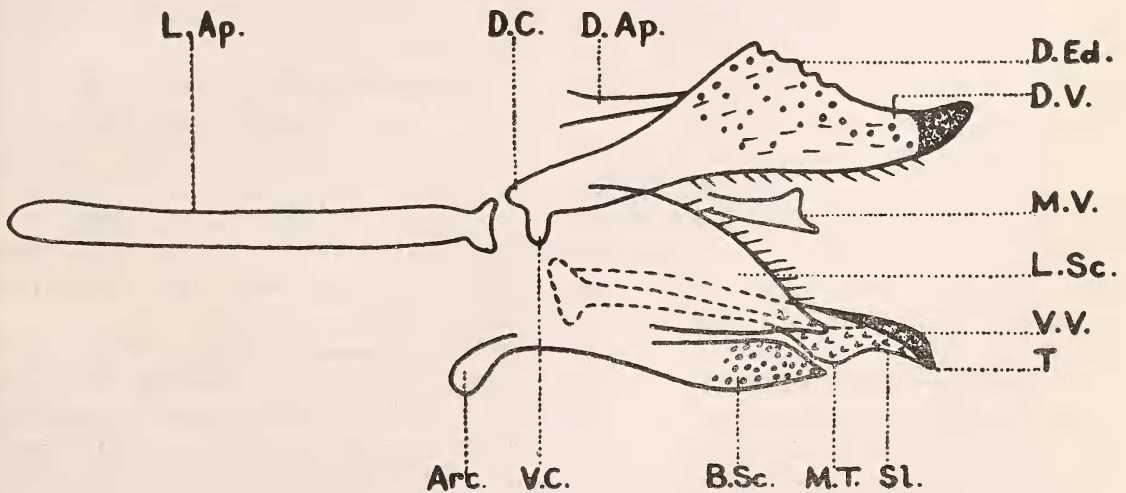


Fig. 1. Ovipositor in lateral view.

Abbreviations: Arc.—Arcus; B.Sc. — Basal sclerite; D.Ap. — Dorsal apodeme; D.C. — Dorsal condyle; D.Ed. — Dorsal edge; D.V. — Dorsal valve; L.Ap. — Lateral apodeme; L. Sc. — Lateral sclerite; M.T. — Mesial tooth; M.V. — Mesial valve; Sl. — Slope; T. — Tip; V.C. — Ventral condyle; V.V. — Ventral valve.

9. *Oxya hyla* Serville (Pl. 1, fig. I).—Dorsal valve long and narrow, five and a half times as long as wide, longer than lateral apodeme, dorsal edge with acute spines; ventral valve long, lower margin with acute spines, basal sclerite narrow and serrated; mesial valve long and pointed.

10. *Oxya velox* (Fabricius) (Pl. 1, fig. J).—Dorsal valve long and narrow, six and a half times as long as wide, longer than lateral apodeme, dorsal edge with small blunt spines; ventral valve long, lower margin with small blunt spines, basal sclerite narrow and smooth; mesial valve long and pointed.

11. *Choroedocus robustus* (Serville) (Pl. 1, fig. K).—Dorsal valve broad, slightly less than three times as long as wide, much shorter than lateral apodeme; ventral valve with slope slightly concave, basal sclerite tuberculate at apical half; mesial valve dilated apically.

12. *Eyprepocnemis alacris* (Serville) (Pl. 1, fig. L).—Dorsal valve moderately broad, more than three times as long as wide, as long as lateral apodeme; ventral valve with slope broadly concave, basal sclerite punctate; mesial valve slightly dilated apically.

13. *Acrida turrita* (Linnaeus) (Pl. 1, fig. M).—Dorsal valve broad, two and a half times as long as wide, much shorter than lateral apodeme, apical tip short; ventral valve with apical tip short, basal sclerite narrow and tuberculate; mesial valve with apical tip short and blunt.

14. *Acrida exaltata* (Walker) (Pl. 1, fig. N).—Dorsal valve broad, slightly more than three times as long as wide, shorter than lateral apodeme; ventral valve with apical tip short, basal sclerite narrow and tuberculate; mesial valve slightly dilated apically.

15. *Ceracris nigricornis* Walker (Pl. 1, fig. O).—Dorsal valve narrow, four times as long as wide, shorter than lateral apodeme, apical

tip blunt; ventral valve with apical tip long and pointed, slope deeply concave, basal sclerite narrow.

16. *Phlaeoba infumata* Brunner (Pl. 1, fig. P).—Dorsal valve narrow, slightly more than four times as long as wide, shorter than lateral apodeme; ventral valve with apical tip long and pointed, slope deeply concave, mesial tooth truncated, basal sclerite setose on apical half; mesial valve blunt.

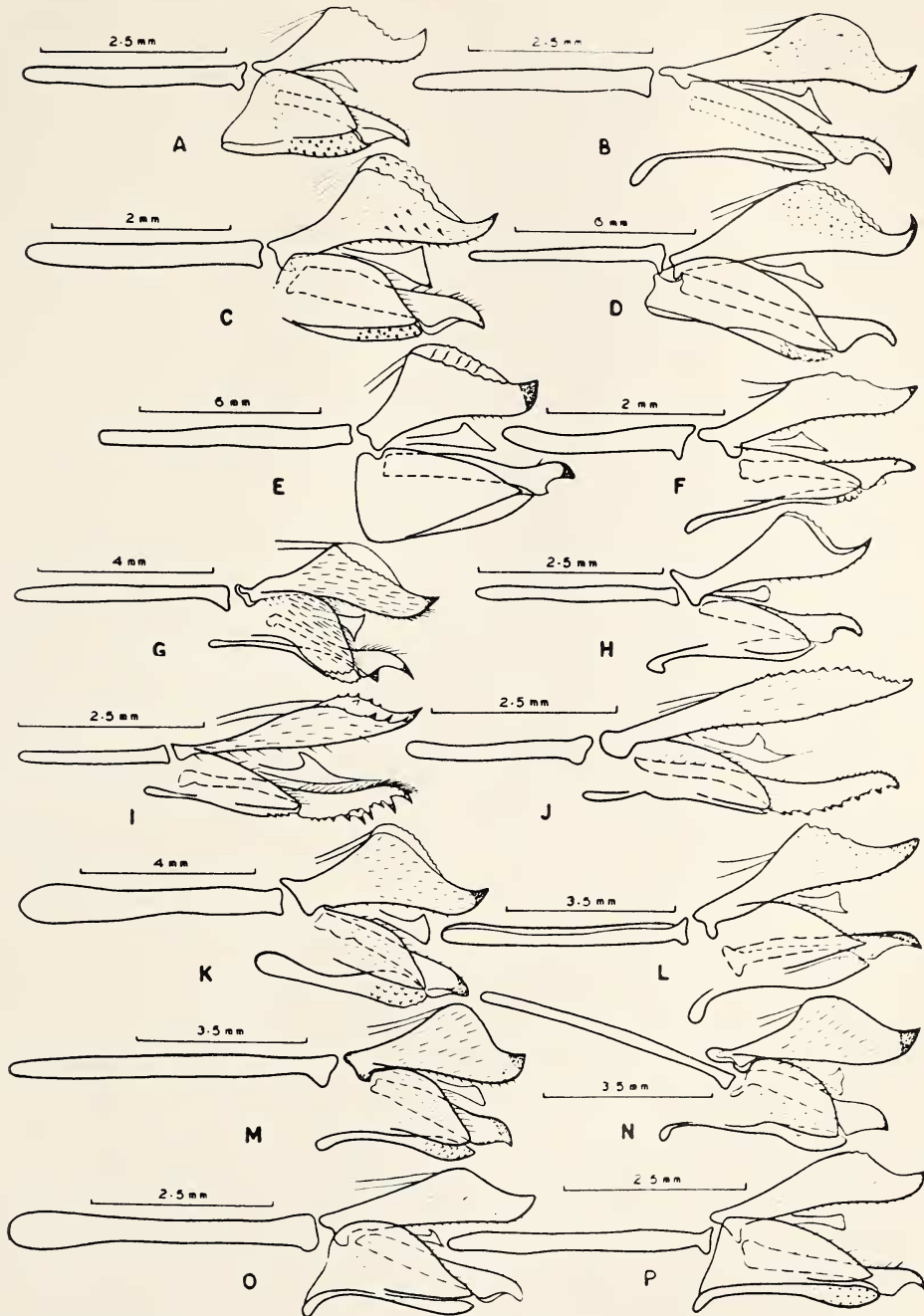
17. *Xenocatantops humilis* (Serville) (Pl. 2, fig. A).—Dorsal valve narrow, more than three times as long as wide, shorter than lateral apodeme, apical tip blunt; ventral valve with apical tip long and pointed, slope deeply concave, basal sclerite narrow and smooth; mesial valve dilated apically.

18. *Eucoptacra praemorsa* (Stal) (Pl. 2, fig. B).—Dorsal valve narrow, more than four times as long as wide, much longer than lateral apodeme, apical tip long and blunt, dorsal condyle prominent; ventral valve with apical tip long and pointed, slope deeply concave, basal sclerite narrow.

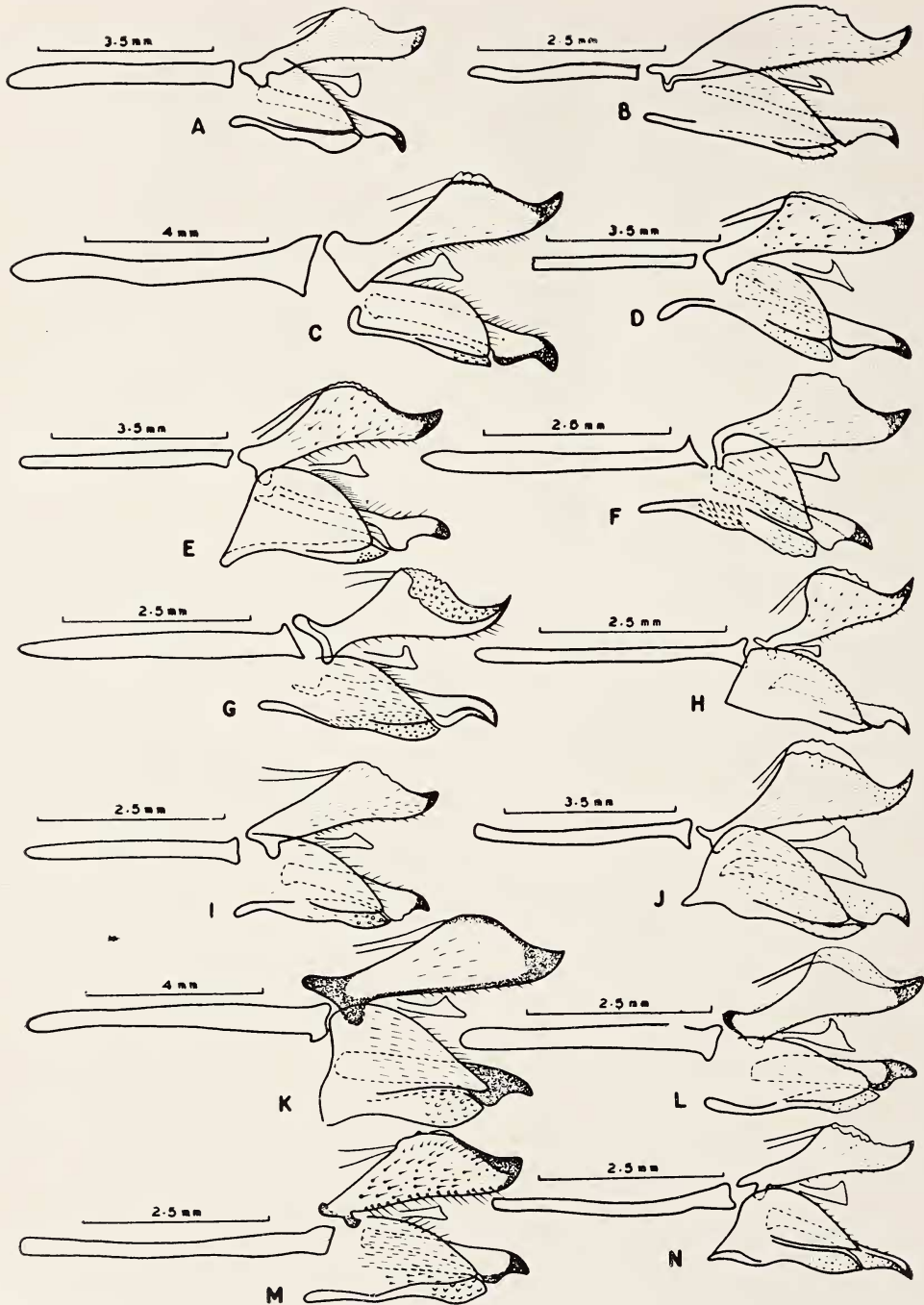
19. *Orthacanthacris* sp. (Pl. 2, fig. C).—Dorsal valve moderately broad, three and a half times as long as wide, shorter than lateral apodeme, apical tip long and blunt, dorsal condyle much prominent; ventral valve with apical tip blunt, slope concave, basal sclerite narrow and tuberculate; mesial valve dilated apically.

20. *Brachyxenia scutifera* (Walker) (Pl. 2, fig. D).—Dorsal valve moderately broad, less than four times as long as wide, longer than lateral apodeme, apical tip blunt; ventral valve with apical tip acute, basal sclerite punctate.

21. *Caloptenopsis glaucopsis* (Walker) (Pl. 2, fig. E).—Dorsal valve moderately broad, more than three times as long as wide, as long as lateral apodeme, apical tip blunt;



Figs. A-P. Ovipositor in lateral view: (A) *Pyrgomorpha conica* (Olivier); (B) *Atarctomorpha crenulata* (Fabricius); (C) *Chrotogonus trachypterus* (Blanchard); (D) *Aularches scabiosae* (Fabricius); (E) *Poecilocerus pictus* (Fabricius); (F) *Orthacris ceylonica* (Kirby); (G) *Hieroglyphus banian* (Fabricius); (H) *Spathosternum prasiniferum* (Walker); (I) *Oxya hyla* Serville; (J) *Oxya velox* (Fabricius); (K) *Choroedocus robustus* (Serville); (L) *Eyprepocnemis alacris* (Serville); (M) *Acrida turrita* (Linnaeus); (N) *Acrida exaltata* (Walker); (O) *Ceracris nigricornis* Walker; (P) *Phlaeoba infumata* Brunner.



Figs. A-N. Ovipositor in lateral view: (A) *Xenocatantops humilis* (Serville); (B) *Eucoptacra praemorsa* (Stal); (C) *Orthacanthacris* sp.; (D) *Brachyxenia scutifera* (Walker); (E) *Caloptenopsis glaucopsis* (Walker); (F) *Oedaleus abruptus* (Thunberg); (G) *Aiolopus affinis* (Bolivar); (H) *Acrotylus humberianus* Saussure; (I) *Trilophidia annulata* (Thunberg); (J) *Gastrimargus transversus* (Thunberg); (K) *Locusta migratoria* (Linnaeus); (L) *Morphacris citrina* Kirby; (M) *Doclostaurus decisus* (Walker); (N) *Stauroderus bicolor* (Charpentier).